UNITED STATES MARINE CORPS
LOGISTICS OPERATIONS SCHOOL
MARINE CORPS COMBAT SERVICE SUPPORT SCHOOLS
TRAINING COMMAND
PSC BOX 20041
CAMP LEJEUNE, NORTH CAROLINA 28542-0041

STUDENT OUTLINE

CHARACTERISTICS OF AMPHIBIOUS SHIPS, AND LANDING CRAFT

LEARNING OBJECTIVES

1. Terminal Learning Objective: Given supplies and equipment to be embarked, necessary tools, equipment, and material, information concerning the type of ship, aircraft, or conveyance to be used, and the references prepare supplies and equipment for embarkation to ensure compliance with the requirements of the specific type of ship, aircraft, or other conveyance to be used. (0431.04.01)

2. Enabling Learning Objective:

(1) (Given a picture of an amphibious ship, and the references, identify the type of amphibious ship per the references. (0431.04.01u)

(2) Given a picture of an amphibious ship and the references, identify the characteristics of the amphibious ship per the references. (0431.04.01c)

(3) Given a picture of a landing craft, and the references, identify the type of landing craft per the references. (0431.04.01s)

(4) Given a picture of a landing craft, and the references, identify the characteristics of the landing craft per the references. (0431.04.01t)

(5) Given a picture of a particular type of landing craft and a picture of an amphibious ship, and the reference, identify the quantity and types of landing craft

the amphibious ship can hold per the reference. (0431.04.01v)

OUTLINE

1. AMPHIBIOUS SHIPS:

a. **Amphibious Command Ship, (LCC)**. The mission of the LCC is to serve as the command ship, for the commander of the amphibious task force (CATF); commander of the landing force (CLF); and the air control group commanders during an amphibious operation.

(1) The LCC has a distinctive design; its hull was mirrored after that of the LPH, which was designed and built to transport helicopters. The ship is outfitted with the most advanced communications systems available that support all the command and control requirements for the CATF, CLF, and the air control commander. There are currently two active LCC's; the USS Blue Ridge (LCC-19) stationed in Yokosuka, Japan and the USS Mount Whitney (LCC-20) stationed in Norfolk, VA.

(2) For additional ship characteristics refer to FMFRP 1-18, Amphibious Ships and Landing Craft Data Book, page 2.

b. **Amphibious Assault Ship (General Purpose) (LHA)**. The mission of the LHA is to embark, deploy, and land elements of a Marine landing force in an amphibious operation by helicopter, landing craft, and amphibious vehicles or by a combination thereof.

(1) Some of the LHA's characteristics were taken from other amphibious ships that are no longer in active service. The idea was to design a ship that could carry amphibious cargo (like the LKA, five hulls are currently maintained in Ready Reserve Fleet (RRF)); Carry a composite helicopter squadron (like the LPH, all of which were scraped except the USS Inchon, LPH-12, which was converted to a Mine Counter Measures Command Ship) MCS-12; and provide amphibious transport with a well deck (like the LPD, there are 11 active hulls). These features include a full-length flight deck capable of launching and recovering an AV-8 Harrier detachment, and a composite squadron of USMC helicopters. The well deck was designed to accommodate the World War II generation of landing craft of

which only the Landing Craft Utility (LCU 1600 series) remains our preferred landing craft when landing from the LHA's well deck. The LHA also provides embarked forces with large vehicle deck stowage areas for USMC equipment and ammunition holds capable of holding 10 days of Class V (W), Class V (A), and other additional supplies maintained in the ships holds. The LHA design has provided commanders with a very unique capability for than 30 years. This design was also adopted into the design of the LHD when the Navy was looking at building a ship that would eventually replace the LHA. There were five ships built and they were named after major battles. The five ships of the *Tarawa Class* are:

Ship Name		***Home Port***
USS Tarawa,	LHA-1	San Diego
USS Saipan,	LHA-2	Norfolk
USS Belleau Wood,	LHA-3	San Diego
USS Nassau,	LHA-4	Norfolk
USS Peleliu,	LHA-5	San Diego

(2) For additional ship characteristics refer to FMFRP 1-18, Amphibious Ships and Landing Craft Data Book, page 4.

c. **Amphibious Assault Ship (Multipurpose) LHD**. The mission of the LHD is to embark, deploy, and land elements of a Marine landing force in an amphibious operation by helicopter, landing craft, and amphibious vehicles or by a combination thereof. Also, the LHD is assigned a secondary mission of sea control and power projection.

(1) As mentioned earlier, the LHD's design incorporates the original design features found in the LHA. The LHD's overall capacity numbers for the landing force embarked personnel, vehicle stowage and cargo stowage are very similar to that of the LHA. The aviation facilities where improved from the LHA's and are capable of supporting a composite helicopter squadron or an AV-8 Harrier detachment. The ships biggest advances have come in the command and control facilities built into the ship. The well deck of the LHD can accommodate all current types of landing craft currently in use, or can transport up three Landing Craft Air Cushion (LCAC). The LHD combines the capabilities of the LHA and the LSD making it a versatile and extremely capable addition to the fleet. As of October

2000 current plans call for building eight LHD's. The eight planned ships of the *Wasp Class* LHD are:

Ship Name	***Home Port***
USS Wasp, LHD-1	Norfolk
USS Essex, LHD-2	Sasebo, Japan
USS Kearsage, LHD-3	Norfolk
USS Boxer, LHD-4	San Diego
USS Bataan, LHD-5	Norfolk
USS Bon Homme Richard, LHD-6	San Diego
*USS IWO JIMA, LHD-7	Norfolk
**Unnamed LHD-8	

(2) For additional ship characteristics refer to FMFRP 1-18, Amphibious Ships and Landing Craft Data Book, page 6, or the Ship's Loading Characteristics Pamphlet (SLCP).

*Under construction, christened 25 March 2000, expected commissioning date is 30 June 2001.

**500 million allocated for advance procurement in FY1999. This ship will be funded in incremental funding style. Could be the LHA transitional ship. As of 18 March 2001 future design and look of this ship is still being debated.

d. **Amphibious Transport Dock (LPD)**. The mission of the LPD is to transport and land-embarked forces and their equipment by embarked landing craft or amphibious vehicles augmented by helicopters in an amphibious assault.

(1) The LPD is a versatile ship that performs the mission of amphibious transports, amphibious cargo ships, and the older LSDs by incorporating both a flight deck and a well deck that can be ballasted and deballasted to support landing craft. The Navy's newest class of ship, *San Antonio* (LPD-17), is scheduled to replace the older *Austin Class* LPD 4. The new LPDs will have increased vehicle and substantial cargo carrying capacity, which will make it a key element of 21st Century Amphibious Ready Groups. The San Antonio class will integrate the latest in shipbuilding and warfighting technologies to support current and future Marine Corps aircraft, the Advanced Amphibious Vehicle (AAAVs) and air cushion or conventional landing craft.

(2) The LPD-17 will be a highly reliable, warfare capable ship and the most survivable amphibious ship ever put to sea. The design incorporates state-of-art self-defense capabilities, C4I, and reduced radar cross-section signature technologies. The ship will have the ability to carry LCACs and AAAVs. Current plans call for building 12 San Antonio class LPD's over a ten-year period. As the newer LPDs are built and delivered to fleet, the older Austin class LPDs will be decommissioned. Listed below are the Austin class LPDs and their homeports along with the San Antonio class LPDs and their projected delivery dates and homeports.

Austin Class LPDs:

Ship Name	***Home Port***	***Decommission Date***
USS Austin, LPD-4	Norfolk	2005
USS Ogden, LPD-5	San Diego	2003
USS Duluth, LPD-6	San Diego	2005
USS Cleveland, LPD-7	San Diego	2008
USS Dubuque, LPD-8	San Diego	2008
USS Denver, LPD-9	San Diego	2005
USS Juneau, LPD-10	Sasebo JPN	2007
USS Shreveport, LPD-12	Norfolk	2004
USS Nashville, LPD-13	Norfolk	2007
USS Trenton, LPD-14	Norfolk	2007
USS Ponce, LPD-15	Norfolk	2008

San Antonio Class LPDs:

Ship Name	***Home Port***	***Commission Date***
USS San Antonio, LPD-17	Norflok	2003
USS New Orleans, LPD-18	San Diegio	2004
USS Mesa Verde, LPD-19	Norfolk	2005
USS Green Bay, LPD-20	San Diego	2005
LPD-21	San Diego	Projected 2006
LPD-22	Norfolk	Projected 2006
LPD-23	San Diego	Projected 2006
LPD-24	San Diego	Projected 2007
LPD-25	Norfolk	Projected 2007
LPD-26	San Diego	Projected 2007
LPD-27	Norfolk	Projected 2008
LPD-28	Norfolk	Projected 2008

(3) For additional information about the LPD-17 consult the student extract B107-2.

e. **Dock Landing Ship *Whidbey Island Class* (LSD)**. The Mission of the LSD-41 class is to transport and launch loaded amphibious craft and vehicles with their crews and embarked personnel in amphibious assaults by landing craft and amphibious vehicles.

(1) The LSD-41 class of ship was the designed replacement for the *Thomason Class* LSD*, and the Anchorage Class* LSD*.* The Whidbey Island Class (LSD-41) was designed specifically to operate with the Landing Craft Air Cushion (LCAC) vessel. It has the largest capacity for the LCAC (four), which is more than any other amphibious platform. It can also provide docking and repair services for the LCAC and other conventional landing craft. In 1987 the Navy requested additional funding to build a *Cargo Variant* of the LSD-41 Class.

(2) The LSD-49 (*Harpers Ferry Class*) differs from the original LSD-41 by reducing the number of LCACs that it can carry to two. This was done to add additional cargo capacity to the ship.

Whidbey Island Class LSD:

Ship Name	***Home Port***
USS Whidbey Island, LSD-41	Little Creek, Va.
USS Germantown, LSD-42	Sasebo, Japan
USS Fort McHenry, LSD-43	Sasebo, Japan
USS Gunston Hall, LSD-44	Little Creek, Va.
USS Comstock, LSD-45	San Diego
USS Tortuga, LSD-46	Little Creek, Va.
USS Rushmore, LSD-47	San Diego
USS Ashland, LSD-48	Little Creek, Va.

Harpers Ferry Class:

Ship Name	***Home Port***
USS Harpers Ferry, LSD-49	San Diego
USS Carter Hall, LSD-50	Little Creek, Va.
USS Oak Hill, LSD-51	Little Creek, Va.
USS Pearl Harbor, LSD-52	San Diego

(3) For additional ship characteristics refer to FMFRP 1-18, Amphibious Ships and Landing Craft Data Book, pages 24 thru 28, or the Ship's Loading Characteristics Pamphlet (SLCP).

f. **Tank Landing Ship *(Newport Class* LST)**: The mission of the LST is to transport and land amphibious assault vehicles, tanks, combat vehicles, and equipment in an amphibious assault.

(1) The Newport Class LST was designed to employ higher speed and trimmer lines then "snub-nosed" LST designed during World War II. Ships of this class are the first to depart from the bow-door design that characterized the workhorses of World War II. A unique characteristic of the Newport Class LST is the two huge derricks used to extend and retract its 100-foot bow ramp. When extended, the ramp is attached to the main deck by a pivot post. The end of the ramp rests on a beach or pontoon causeway depending on the water depth and beach gradient. A stern gate allows off-loading of amphibious vehicles directly into the water. There are two remaining ships of this class of 20 that were built that are now assigned to the Naval Reserve Forces. The USS Frederick, LST-1184 is home ported at Pearl Harbor, Hi.

(2) For additional ship characteristics refer to FMFRP 1-18, Amphibious Ships and Landing Craft Data Book, page 30, or the Ship's Loading Characteristics Pamphlet (SLCP).

2. LANDING CRAFT:

a. **Landing Craft Air Cushion (LCAC)**. The mission of the LCAC is to transport and land heavy vehicles, equipment, personnel, and cargo during ship-to-shore and across the beach in an amphibious assault.

(1) The LCAC is a new generation of amphibious landing craft. Combining the heavy lift capability of the surface assault with the high speeds of helicopterborne assault, the LCAC adds a new dimension to the capabilities of the amphibious force. The LCAC is capable of carrying 60-75 ton payload. The advantages of air-cushion landing craft are numerous, such as carrying heavy payloads like the M1 tank, at high speeds. Their payload and speed means more forces reach the shore in a shorter time, with shorter

intervals between trips. The air cushion allows this vehicle to reach more than 70 percent of the world's coastline, while conventional landing craft such as the Landing Craft Utility (LCU 1600 series) can land at only 15 percent of the world's coastlines.

(2) Thirty-three air-cushion landing craft were authorized and appropriated through Fiscal year (FY) 1986. An additional 15 were funded in FY89, 12 more in FY90 and FY91. The remaining 24 were funded in FY92. As of December 1995, 82 LCACs have been delivered to the Navy.

(3) For additional general characteristics on the LCAC, refer to FMFRP 1-18, Amphibious Ships and Landing Craft Data Book, page 31.

b. **Landing Craft Utility (LCU)**. The mission of the LCU is to land heavy vehicles, equipment, personnel, and cargo during ship-to-shore of an amphibious assault.

(1) The tank landing craft (LCT) of World War II is the predecessor of the LCU. Because of the LCTs versatility and use in landing almost anything, the name was changed to the LCU. This craft has been adapted for many purposes including salvage operations, ferry boats for vehicles and passengers, and underwater test platforms. It is a self-sustaining craft with habitability features found aboard ships. The steel hull provides high durability with deck loads of 800 pounds per square foot. The arrangement of machinery and equipment has been taken into account with built-in redundancy in the event of battle damage.

(2) The LCU is capable of transporting tracked or wheeled vehicles and troops from amphibious assault ships to beachheads, ramps, or piers. The LCU has both a bow ramp and stern ramps for on-load/offload at either end. The LCU can be married to another LCU for offloading if required.

(3) For additional Craft information, refer to FMFRP 1-18, Amphibious Ships and Landing Craft Data Book, page 33.

c. **Landing Craft Mechanized (LCM)**. The mission of the LCM is to land heavy vehicles, equipment, personnel, and cargo during ship-to-shore of an amphibious assault.

(1) Like the design of the LCU the LCM-8 comes from the World War II generation of landing craft. The active use of the LCM-8 is limited and is rarely seen on board Naval amphibious ships any longer. The LCM-8's are still placed on board and are still utilized during Maritime Prepositioning Force (MPF) Operations.

(2) For additional Craft information, refer to FMFRP 1-18, Amphibious Ships and Landing Craft Data Book, page 35.

d. **The Lighter Amphibious Re-supply Cargo 5-Ton (LARC-V)**. The LARC V is a single screw, four-wheeled, self-propelled amphibian, powered by a diesel engine. This vessel has strengthened aluminum hull allowing it to enter the water at 9 knots. The side lifelines can be removed enabling a forklift to unload palletized cargo. Under optimum conditions the LARC V can ascend a 60% grade. The LARC V is used for the following: boat salvage work and raising inoperable ramps, safety boat in support of the lifeguard detail for surf operations, transfer of material and personnel between the beach and craft offshore, towing disabled or stranded vehicles clear of landing craft, and pumping out swamped boats and firefighting (using the trash pump).

REFERENCE:

FMFRP 1-18
Student H/O B107-2 LPD-17/LARC V extract.